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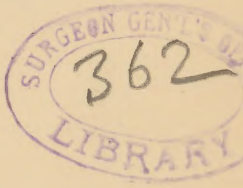

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THE RESUSCITATION OF ASPHYXIATED NEWBORN INFANTS BY THE SUSPENSION METHOD.

By LLEWELLYN ELIOT, M.D.,
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The subject to which I venture to call your attention, "The Resuscitation of Asphyxiated Newborn Infants by the Suspension Method," may seem dull, but the vast importance which attaches to it, in view of the number of stillborn infants reported, will serve, in a measure, to dissipate its dulness.

For many years the resuscitation of such children has claimed my attention, and it is my belief that many cases reported as stillbirths have been proper subjects for the successful employment of the suspension method. This belief leads me to present the observations here recorded, hoping that my success in its employment will lead others to have recourse to it. The extreme simplicity of its application should be a strong argument in its favor, and as it does not interfere with the employment of other measures it may, in this light, be considered a *dernier ressort.*

In consulting works upon obstetrics, this method of treatment of asphyxiated infants is conspicuous by its omission, but now and again it is mentioned in medical journals[1] as a method which might prove of success.

The Report of the Health Officer of the District of Columbia[2] shows the number of births reported during the nine years—1879 to 1887—to be 31,815; of this number, 3390 are recorded as stillbirths. This will give a percentage of stillbirths to births of 10.7 for the nine years. For the year ending

[1] Conner, J. J., Med. and Surg. Reporter, vol. 58, p. 631.

[2] Report of the Health Officer District of Columbia, 1887, pp. 156 and 157.

June 30, 1887, the births reported numbered 3728; of this number, 406 were reported as stillbirths, or a percentage of stillbirths to births of 10.9. These figures do not include all cases of births or stillbirths, but only those that are reported to the Health Officer, and I have no doubt the percentage would far exceed these figures if all cases of birth and stillbirth were reported. Among the causes of stillbirths, or asphyxia neonati, are protracted labor, where the head has been exposed to long-continued and severe pressure; the premature detachment of the placenta; the too frequent administration of the hydrate of chloral during the labor; the knotting of the funis; and coiling of the cord about the child's neck, tightly constricting it.

During four years' residency at the Washington Asylum Hospital of this city, my opportunities for observation in the practice of obstetrics were unequalled, and the practice of the various methods of resuscitation of stillborn infants was watched with a great degree of interest. Among the many methods that have been suggested and put into practice may be mentioned, artificial respiration in its various forms; slapping; dashing cold water in the face; dipping the child into cold water and then into hot water alternately; exposure to cold; and allowing the cord to bleed. These different measures have met with both success and failure, but I consider the method of suspension by the feet superior to any or all of them. It can be employed by any one, and is not attended with danger.

The following authors do not mention this method: Playfair,[1] Bedford,[2] Maygrier,[3] Ramsbotham,[4] King,[5] Leishman,[6] Landis,[7] Lusk,[8] Smith,[9] Verrier,[10] Collins,[11] Parvin,[12] and Charpentier.[13] Dewees,[14] when writing "of the necessary

[1] Playfair, System of Obstetrics.
[2] Bedford, Prin. and Pract. of Obstetrics.
[3] Maygrier, Midwifery.
[4] Ramsbotham, Obstet. Med. and Surg.
[5] King, Manual of Obstetrics.
[6] Leishman, System of Midwifery.
[7] Landis, Management of Labor.
[8] Lusk, Sci. and Art of Midwifery.
[9] Smith, Lectures on Obstetrics.
[10] Verrier, Partridge, Manual of Obstetrics.
[11] Collins, A Pract. Treat. on Midwifery.
[12] Parvin, Sci. and Art of Obstetrics.
[13] Charpentier, Pract. Treat. on Obstetrics.
[14] Dewees, System of Midwifery, p. 188, ed. 1828.

duties toward the child," mentions the suspension method as follows: "By placing the child's mouth downward, and holding the body and hips higher than the head; at the same time gently shaking the child, so as to disengage any mucus that may be lodged in the trachea, and permitting it to flow from the mouth, by making this the depending part, . . . renew the inflations and the suspensions alternately, until the mucus flow from the mouth. By proceeding in this manner I have often had the satisfaction of seeing the child restored under very discouraging circumstances. . . . This operation should never be neglected, nor should it be too soon relinquished." Byford[1] suggests . . . "the head should be placed downward, much below the level of the hips and feet, and the body exposed to as high a temperature before the fire or stove as can be commanded at the time." Hodge,[2] and Cazeaux, and Tarnier[3] quote Dewees. Barnes[4] mentions Howard's[5] method as follows: "The child is held on its back in the operator's left arm, the head hanging down a little; this attitude opens the larynx; then with the right hand the chest-walls and abdomen are alternately compressed and relaxed twelve to sixteen times in the minute." Sims[6] very graphically describes a case of chloroform narcosis, occurring when he was operating at St. Germain, on December 19, 1861, resuscitated by Nélaton, by suspending the patient head down, with the feet over the shoulders of an assistant. Here the suspension was continued for twenty minutes, and had to be repeated three times before it was entirely successful. Nélaton had employed this means of resuscitation as far back as 1857. Chisolm[7] also records his experience in such cases, and I myself have employed it with success in three instances. In the employment of this method in asphyxiated cases, it is well to remember that in asphyxia neonati livida, or the condition almost approaching apoplexy, the cord must be allowed to bleed a little while in suspending

[1] Byford, Theory and Pract. of Obstetrics, p. 241.
[2] Hodge, System of Obstetrics.
[3] Cazeaux and Tarnier, Theory and Pract. of Obstetrics.
[4] Barnes, System of Obstetric Medicine and Surgery, p. 484.
[5] Howard, B., Lancet, London, vol. i. p. 750.
[6] Sims, J. M., The Story of My Life, p. 321.
[7] Chisolm, The Medical Record, N. Y., vol. 33, p. 63.

the child, and in those cases of asphyxia neonati pallida no such bleeding will be necessary, but rather contraindicated. The following are among the cases in which I have employed this method.

CASE I.—L. M., white, aged twenty-five years, born in New York, was delivered of her second child on January 26, 1888. Labor pains set in at three o'clock on the morning of January 25th, with the head presenting. The first stage was very tedious. At ten o'clock at night, when I was first called, examination showed impaction of the head with rupture of the membranes. As both the patient and her husband strenuously opposed the application of the forceps, she was allowed to continue her ineffectual labor until nine in the morning, when I determined either to deliver instrumentally or withdraw from the case. Finally, after much persuasion, they consented to their application. Summoning Dr. John Walter, who administered the anesthetic—the alcohol-chloroform-ether mixture—I applied the instruments, and we succeeded in delivering her of a male child, very much cyanosed. Before the delivery was completed cold water was dashed upon the child's head, but without effect. As the cord was encircled about the neck, it was cut and ligatured as soon as the head was delivered; with much difficulty the remaining portions of the body were delivered. Dr. Walter now pressed firmly upon the uterus; the hemorrhage was considerable; hour-glass contraction followed, and the placenta had to be extracted by introducing the hand. To return to the child. The flow of a few drops of blood, spanking, cold water dashed into the face, failed to relieve its asphyxiated condition. No efforts at respiration were excited; no pulse could be detected. The child was now taken by the feet and held suspended for twenty minutes, during which time dirty, sanguinolent mucus flowed from the mouth. At the expiration of this time the child was breathing naturally, and it was given to the nurse to wash and dress. It suffered for a few days from ophthalmia neonati, and is now alive.

CASE II.—L., white, aged thirty-six years, born in District of Columbia, multipara, experienced the first pains of labor during Saturday night, June 8th; during Sunday she was free from pain; on Monday, at two o'clock in the evening, they returned, but were few and at long intervals; at ten o'clock that night the os was dilating, the bag of waters was forming, and the head presenting. Owing to the severity of the pains she was given the alcohol-chloroform-ether mixture, which she administered herself. At three o'clock in the morning, I decided upon instrumental delivery, and to this end summoned Dr. R. S. Hill. After administering a sufficient quantity of the mixture to induce anesthesia, I applied the forceps, but with great difficulty and after much perseverance. Applying traction, they slipped; applying them a second time, I was successful in delivering her of a male child. The head was arrested at the vulva, and for some time resisted traction with the hands applied under the jaws and at the back of the head. The placenta was resting upon the anterior aspect of the thighs, the cord passed

between the legs, up the back, and around the neck, down the back and between the thighs to the umbilicus. The pressure around the neck was so great that I could not tell, on account of the cyanosis, where the hair ended and the face commenced; there was no pulsation to be felt in the cord, no cry, no indication of life. As quickly as delivery could be completed the cord was ligatured. Dr. Hill now took charge of the mother, administered a teaspoonful of the fluid extract of ergot, extracted the placenta by Crédé's method, and applied continuous pressure over the uterus. There was considerable hemorrhage, but it was soon controlled by these measures. Immediately after the cord was ligatured I took charge of the baby and held it suspended by the feet; this was more a forlorn hope than anything else. A gasp, such as is seen in the dying, was the only response, while dirty mucus ran from the mouth. The suspension was continued, and soon this gasp was followed by another, and then another, until the child cried, and showed that our efforts were successful. The suspension continued ten minutes. The nurse then took charge of the baby, and washed and dressed it. It showed no effects of the asphyxia, and is to this day a strong, healthy child.

Since writing the above, I find Dr. C. W. Spicer[1] records his successful experience with this method, but he also employed artificial respiration at the same time. In my cases, I discard artificial respiration and employ suspension alone.

[1] Spicer, C. W., Med. and Surg. Reporter, vol. 36, p. 477.